

ABSTRACT

A system and a method for simple and robust baud-rate timing recovery suitable for jointly operating with a decision-feedback equalizer are disclosed. Timing functions for timing recovery are extracted only from filter coefficients of feed-forward and feedback filters. The relation between the coefficients of feed-forward filter and the impulse response is derived under a zero-forcing condition while the relation between the coefficients of the feedback filter and the impulse response is known. Based on the relations, several timing functions with varied degrees of computation are derived, which can drive the sampling instances approximately at the peak point of the channel impulse response. Since the derived timing functions use equalizer coefficients, they work jointly with equalization even without using a training sequence. Simulation results over 5-m and 100-m UTP Category-5 cables at 125M Baud show fast and robust timing recovery operation in a phase-locked loop.